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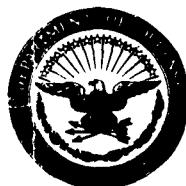
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THE **BOEING** COMPANY

CODE IDENT NO. 81205

NUMBER D2-13944-708TITLE FLIGHT ARTICLE MASS PROPERTIES REPORT FOR MINUTEMANWING I COMPONENTS, MISSILES 708-858MODEL NO. WB-133A CONTRACT NO. AF04(694)-46ISSUE NO. 25 ISSUED TO astia

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SUMMARY

This report contains mass property summaries of the Boeing components for a series of Operational Wing I Minuteman missiles. The serialized components included in the data for each missile are those committed to that particular missile during the course of production in Seattle and may not be the ones finally installed during missile assembly at Air Force Plant 77.

1.0 INTRODUCTION

1.1 REFERENCES

1.1.1 BSD Exhibit 62-45, "Mass Properties Control Data for WS-133A Dated 3 August 1962.

1.1.2 CCN 258 (BSD-63MAN-2597) to AF04(647)-580 Dated 5 October 1962.

1.1.3 Boeing Document D2-13943, "Flight Article Mass Properties Report for CTLI Installations.

1.1.4 Boeing Document D2-13944-501, "Flight Article Mass Properties Report for Missile 501 Components."

1.1.5 Boeing Document D2-13957-4 "Statistical Means and Dispersions for the Mass Properties of Boeing Components for the Wing I Operational Minuteman Missile - March 1, 1963."

1.1.6 Boeing Document D2-13945-xxx "Air Force Plant 77 Flight Article Mass Properties Report for Missile xxx."

1.2 COMPONENT SERIAL NUMBERS

Component serial numbers appear on the data summary sheet for each missile. See pages 9 through 18.

1.3 DISCUSSION

This weight report for the Boeing components of a series of Operational Wing I Minuteman missiles is presented in accordance with section 3.1.1 of BSD Exhibit 62-45 (reference 1.1.1) as authorized by CCN 258 to AF04(647)-580 (reference 1.1.2). In order to conform more closely to the requirements of the BSD exhibit, some changes have been made to the format used in earlier reports in this series. Since the data is to be reported monthly, this report contains data for a series of missiles instead of a single missile as in the past. The data for each missile reported includes the mass properties of the major components assigned to each missile in the manufacturing records at Seattle. (These may not be the same components finally assembled together at Air Force Plant 77. See Reference 1.1.6 for the final configuration). Mean mass properties are used for components other than the interstages, aft skirt, and base heat deflectors since the weights for these remaining items are small. Mean and dispersion back-up data for these items can be found in the latest quarterly means and dispersions report (reference 1.1.5).

The data presented in this report consist of (1) sectional summaries of the total Boeing weight responsibility for each missile covered by this report, (2) a sectional summary of the components whose mean weights are used in lieu of actual weights, (3) summary check lists by missile section, (4) a list of Engineering Change Proposals incorporated on the hardware included in this report, and (5) actual weighing records for the interstages, the aft skirt, and the base heat deflectors.

The actual weighing records for the major components covered by this report can be found in section 6 (pages 22 through 59). In order to limit the size of this report, weighing diagrams and inventory lists have been omitted for all but the first unit of each interstage and skirt since the components have all been weighed in the "complete" condition. However, these records are on file and can be supplied if necessary. The change records found in section 6 are listed in order by serial number for each major component in order to assist in cross referencing the components in case of substitution at a later date.

1.4 CTLI PROVISIONS

The only CTLI provisions incorporated into this report are those components which are installed on every operational missile. The mass properties data for CTLI components which will be added at Vandenberg Air Force Base are reported in reference 1.1.3.

1.5 WEIGHING PROCEDURES

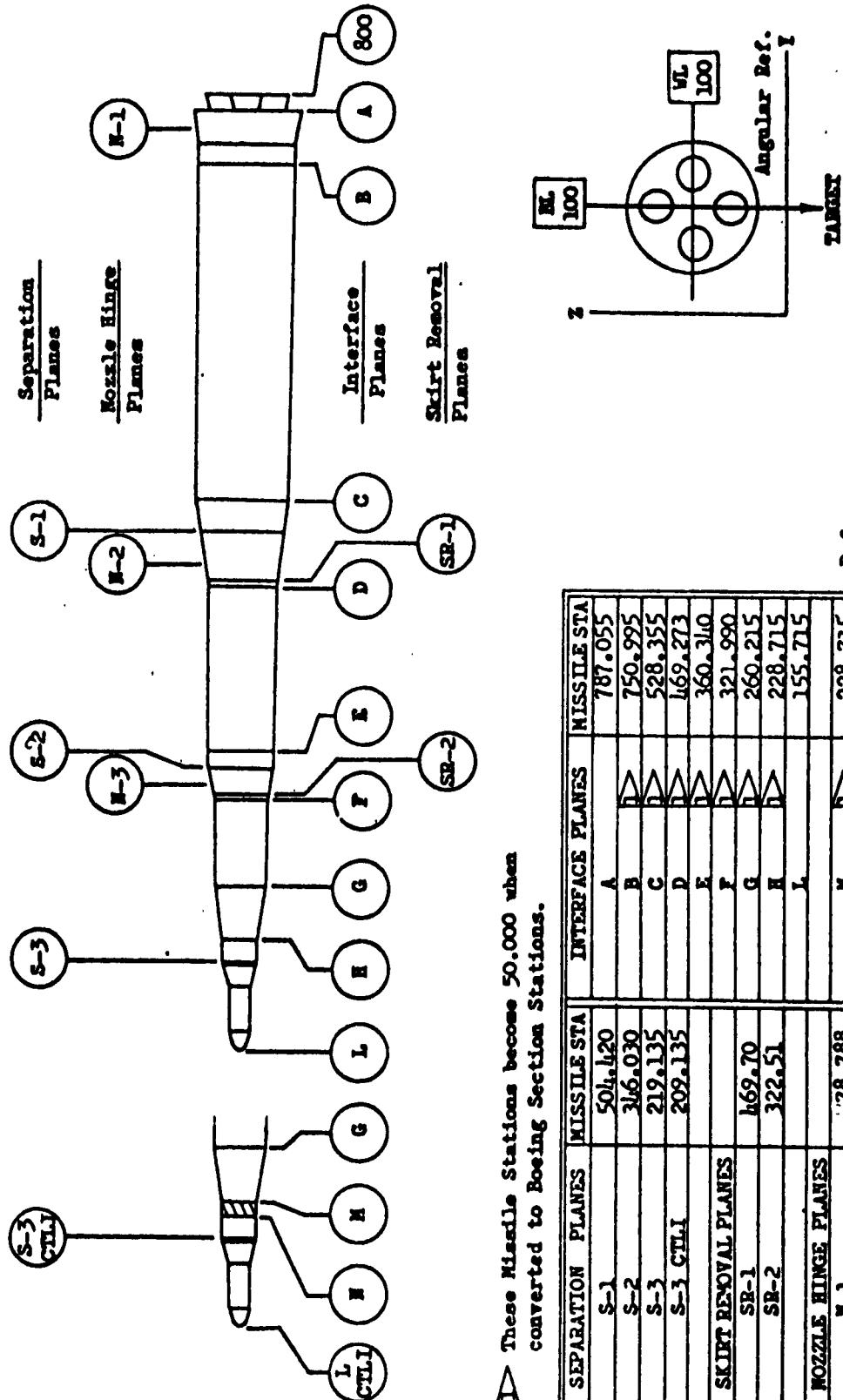
A description of the weighing procedures and an accuracy statement will be found in reference 1.1.4.

1.6 ENGINEERING CHANGE PROPOSAL (ECP) SUMMARY

See page 21 for a list of the ECP's incorporated on the Boeing components covered by this report. The ECP's listed are those not covered by the latest revision to "Modal Specification for Guided Missile Main Assemblage, S-133-1000", Dated 12 March 1963 and amended by SCN 1 through SCN 8.

**WING I
OPERATIONAL AND CTLI MISSILE STATION DIAGRAM**

2.0



SEPARATION PLANES	MISSILE STA	INTERFACE PLANES	MISSILE STA
S-1	504,120	A	787,055
S-2	316,030	B	750,995
S-3	219,135	C	528,355
S-3 CTLI	209,135	D	1,69,273
		E	360,310
		F	321,990
		G	260,215
		H	228,715
		I	155,715
NOZZLE HINGE PLANES			
N-1	78,788	J	228,715
N-2	480,853	K	218,715
N-3	330,090	L CTLI	115,715

Reference
25-19999
DCM-E

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3.1 MISSILE NO. 708
WEIGHT AND BALANCE SUMMARY
MAJOR COMPONENTS S/N 0000160

REPORT NO.

DATE

LINE	SEC.	DESCRIPTION	DATA	EXPENDED WEIGHT (LB)	TOTAL WEIGHT (LB)	CENTER OF GRAVITY			INERTIA SLUG FT ² ×10 ⁻³	
						LONG.*	LAT.	VERT.	ROLL	PITCH
1	41	RV Spacer								
2		Silo								
3		Aero								
4	39	CTLI Section								
5		Silo								
6		Aero								
7	42	G&C Section		1.02	80.9	100.0	100.0	0	0	
8		Silo								
9		Aero								
10	44	3rd Stage Engine			20.18	94.86	106.88	111.20	0	.004
11		Silo	0.6			89.2	110.3	117.7	0	0
12		Aero								
13		Base	0.4			131.8	100.0	100.0	0	0
14	45	Interstage 2-3			122.45	60.05	100.24	101.29	.012	.007
15		(Fwd)	Silo							
16		Aero								
17		Base	4.6			58.7	108.7	110.0	0	0
18		Silo	1.7			61.7	100.4	100.6	0	0
19		Jettisoned	Aero							
20		Portion	Base							
21		Jett	101.96			61.04	99.32	100.42	.011	.006
22	45	Interstage 2-3			75.34	79.02	99.39	101.80	.008	.004
23		(Aft)	Silo	2.6		81.2	100.6	101.0	0	0
24		Aero								
25	46	2nd Stage Engine			39.02	149.57	105.44	109.46	.001	.021
26		Silo	1.0			103.9	112.3	121.2	0	0
27		Aero								
28		Base	3.3			187.7	100.0	100.0	0	0
29	47	Interstage 1-2			256.42	67.22	100.08	100.78	.036	.023
30		(Fwd)	Silo							
31		Aero								
32		Base	5.1			61.0	109.3	111.7	0	0
33		Silo	4.9			67.2	100.0	100.0	.001	0
34		Jettisoned	Aero							
35		Portion	Base	7.3		67.4	100.3	100.2	.001	.001
36		Jett	218.75			68.54	99.37	100.13	.032	.020
37	47	Interstage 1-2			139.43	96.45	101.25	100.85	.028	.016
38		(Aft)	Silo	5.6		97.6	101.5	102.6	.001	.001
39		Aero								
40	48	1st Stage Engine			58.09	219.56	110.68	118.38	.003	.107
41		Silo	2.4			160.5	117.2	129.7	0	.002
42		Aero								
43		Base	3.0			314.6	100.0	100.0	0	0
44	49	Skirt			351.44	68.96	100.66	101.09	.088	.052
45		Silo	32.0			67.9	100.1	100.2	.008	.005
46		Aero								
47		Base	26.8			68.2	100.8	101.2	.007	.004
48		MISSILE			1063.39					
49		Silo	50.8							
50		Aero								
51		Base	50.5							
52		Jett	320.71							

*Boeing Section Stations (See Missile Station Diagram)

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MISSILE NO. TLO
WEIGHT AND BALANCE SUMMARY
MAJOR COMPONENTS S/N 0000181

REPORT NO.

DATE

LINE NO.	DESCRIPTION	DATA	EXPENDED WEIGHT (LB)	TOTAL WEIGHT (LB)	CENTER OF GRAVITY			INERTIA SLUG FT ² x10 ⁻³	
					LONG.	LAT.	VERT.	ROLL	PITCH
1	41 RV Spacer								
2		Silo							
3		Aero							
4	39 CTLI Section								
5		Silo							
6		Aero							
7	42 G&C Section		1.02	80.9	100.0	100.0	0	0	0
8		Silo							
9		Aero							
10	44 3rd Stage Engine		20.12	94.75	106.90	111.23	0	.004	
11		Silo	0.6	89.2	110.3	117.7	0	0	
12		Aero							
13		Base	0.4	131.8	100.0	100.0	0	0	
14	45 Interstage 2-3			123.27	60.10	100.07	101.40	.012	.007
15	(Fwd)	Silo							
16		Aero							
17		Base	4.6	58.7	108.7	110.0	0	0	
18		Silo	1.7	61.7	100.4	100.6	0	0	
19	Jettisoned	Aero							
20	Portion	Base							
21		Jett	102.78	61.10	99.12	100.57	.011	.006	
22	45 Interstage 2-3			75.92	79.02	99.39	101.80	.008	.004
23	(Aft)	Silo	2.6	81.2	100.6	101.0	0	0	
24		Aero							
25	46 2nd Stage Engine			38.99	149.54	105.45	109.47	.001	.021
26		Silo	1.0	103.9	112.3	121.2	0	0	
27		Aero							
28		Base	3.3	187.7	100.0	100.0	0	0	
29	47 Interstage 1-2			253.34	67.42	99.90	101.18	.036	.023
30	(Fwd)	Silo							
31		Aero							
32		Base	5.1	61.0	109.3	111.7	0	0	
33		Silo	4.9	67.2	100.0	100.0	.001	0	
34	Jettisoned	Aero							
35	Portion	Base	7.3	67.4	100.3	100.2	.001	.001	
36		Jett	215.67	68.79	99.16	100.58	.032	.020	
37	47 Interstage 1-2			137.61	96.45	101.25	100.85	.028	.016
38	(Aft)	Silo	5.6	97.6	101.5	102.6	.001	.001	
39		Aero							
40	48 1st Stage Engine			57.96	219.34	110.71	118.43	.003	.107
41		Silo	2.4	160.5	117.2	129.7	0	.002	
42		Aero							
43		Base	3.0	214.6	100.0	100.0	0	0	
44	49 Skirt			350.69	69.06	100.77	100.90	.088	.052
45		Silo	32.0	67.9	100.1	100.2	.008	.005	
46		Aero							
47		Base	26.8	68.2	100.8	101.2	.007	.004	
48	MISSILE			1058.92					
49		Silo	50.8						
50		Aero							
51		Base	50.5						
52		Jett	318.45						

#Boeing Section Stations (See Missile Station Diagram)

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3.3 MISSILE NO. 713
WEIGHT AND BALANCE SUMMARY
MAJOR COMPONENTS S/N 0000161

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DATE

LINE NO.	SEC. NO.	DESCRIPTION	DATA	EXPENDED	TOTAL	CENTER OF GRAVITY			INERTIA	
				WEIGHT (LB)	WEIGHT (LB)	LONG.*	LAT.	VERT.	SLUG FT ² x10 ⁻³	ROLL
1	41	RV Spacer								
2		Silo								
3		Aero								
4	39	CTLI Section								
5		Silo								
6		Aero								
7	42	G&C Section		1.02	80.9	100.0	100.0	0		
8		Silo								
9		Aero								
10	44	3rd Stage Engine		20.20	94.90	106.87	111.19	0	.004	
11		Silo	0.6		89.2	110.3	117.7	0		
12		Aero								
13		Base	0.4		131.8	100.0	100.0	0		
14	45	Interstage 2-3			122.31	60.07	100.05	101.15	.012	.007
15		(Fwd)	Silo							
16		Aero								
17		Base	4.6		58.7	108.7	110.0	0		
18		Silo	1.7		61.7	100.4	100.6	0		
19		Jettisoned	Aero							
20		Portion	Base							
21			Jett	101.82		61.07	99.10	100.25	.011	.006
22	45	Interstage 2-3			75.23	79.02	99.39	101.80	.008	.004
23		(Aft)	Silo	2.6		81.2	100.6	101.0	0	
24		Aero								
25	46	2nd Stage Engine			38.95	149.50	105.45	109.48	.001	.021
26		Silo	1.0		103.9	112.3	121.2	0		
27		Aero								
28		Base	3.3		187.7	100.0	100.0	0		
29	47	Interstage 1-2			252.55	66.97	100.16	101.24	.036	.023
30		(Fwd)	Silo							
31		Aero								
32		Base	5.1		61.0	109.3	111.7	0		
33		Silo	4.9		67.2	100.0	100.0	.001		
34		Jettisoned	Aero							
35		Portion	Base	7.3		67.4	100.3	100.2	.001	.001
36			Jett	214.88		68.27	99.45	100.64	.032	.020
37	47	Interstage 1-2			137.15	96.45	101.25	100.85	.028	.016
38		(Aft)	Silo	5.6		97.6	101.5	102.6	.001	.001
39		Aero								
40	48	1st Stage Engine			58.02	219.44	110.70	118.41	.003	.107
41		Silo	2.4		160.5	117.2	129.7	0		
42		Aero								
43		Base	3.0		314.6	100.0	100.0	0		
44	49	Skirt			350.04	69.03	100.61	100.85	.088	.052
45		Silo	32.0		67.9	100.1	100.2	.008		
46		Aero								
47		Base	26.8		68.2	100.8	101.2	.007		
48		MISSILE			1055.47					
49		Silo	50.8							
50		Aero								
51		Base	50.5							
52		Jett	316.70							

*Boeing Section Stations (See Missile Station Diagram)

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MISSILE NO. 715
WEIGHT AND BALANCE SUMMARY
MAJOR COMPONENTS S/N 0000162

REPORT NO. _____

DATE

LINE	SEC.	DESCRIPTION	DATA	EXPENDED WEIGHT (LB)	TOTAL WEIGHT (LB)	CENTER OF GRAVITY			INERTIA SLUG FT ² x 10 ⁻³	
						LONG.*	LAT.	VERT.	ROLL	PITCH
1	41	RV Spacer								
2		Silo								
3		Aero								
4	39	CTLI Section								
5		Silo								
6		Aero								
7	42	G&C Section		1.02	80.9	100.0	100.0	0	0	
8		Silo								
9		Aero								
10	44	3rd Stage Engine		20.27	95.03	106.85	111.15	0	.004	
11		Silo	0.6		89.2	110.3	117.7	0	0	
12		Aero								
13		Base	0.4		131.8	100.0	100.0	0	0	
14	45	Interstage 2-3 (Fwd)			121.61	60.09	100.23	101.55	.012	.007
15		Silo								
16		Aero								
17		Base	4.6		58.7	108.7	110.0	0	0	
18		Silo	1.7		61.7	100.4	100.6	0	0	
19		Jettisoned	Aero							
20		Portion	Base							
21		Jett	101.12		61.10	99.30	100.73	.011	.006	
22	45	Interstage 2-3 (Aft)			74.73	79.02	99.39	101.80	.008	.004
23		Silo	2.6		81.2	100.6	101.0	0	0	
24		Aero								
25	46	2nd Stage Engine			38.93	149.48	105.45	109.48	.001	.021
26		Silo	1.0		103.9	112.3	121.2	0	0	
27		Aero								
28		Base	3.3		187.7	100.0	100.0	0	0	
29	47	Interstage 1-2 (Fwd)			255.92	67.57	99.89	100.94	.036	.023
30		Silo								
31		Aero								
32		Base	5.1		61.0	109.3	111.7	0	0	
33		Silo	4.9		67.2	100.0	100.0	.001	0	
34		Jettisoned	Aero							
35		Portion	Base	7.3		67.4	100.3	100.2	.001	.001
36		Jett	218.25		68.96	99.15	100.31	.032	.020	
37	47	Interstage 1-2 (Aft)			139.13	96.45	101.25	100.85	.028	.016
38		Silo	5.6		97.6	101.5	102.6	.001	.001	
39		Aero								
40	48	1st Stage Engine			58.06	219.51	110.69	118.39	.003	.107
41		Silo	2.4		160.5	117.2	129.7	0	.002	
42		Aero								
43		Base	3.0		314.6	100.0	100.0	0	0	
44	49	Skirt			350.79	69.13	100.60	100.90	.088	.052
45		Silo	32.0		67.9	100.1	100.2	.008	.005	
46		Aero								
47		Base	26.8		68.2	100.8	101.2	.007	.004	
48		MISSILE			1060.46					
49		Silo	50.8							
50		Aero								
51		Base	50.5							
52		Jett	319.37							

#Boeing Section Stations (See Missile Station Diagram)

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3.5 MISSILE NO. 717
WEIGHT AND BALANCE SUMMARY
MAJOR COMPONENTS S/N 0000163

REPORT NO.

DATE

LINE	SEC.	DESCRIPTION	DATA	EXPENDED WEIGHT (LB)	TOTAL WEIGHT (LB)	CENTER OF GRAVITY			INERTIA SLUG FT ² x 10 ⁻³		
						LONG.*	LAT.	VERT.	ROLL	PITCH	
1	41	RV Spacer									
2		Silo									
3		Aero									
4	39	CTLI Section									
5		Silo									
6		Aero									
7	42	G&C Section		1.02	80.9	100.0	100.0	0	0		
8		Silo									
9		Aero									
10	44	3rd Stage Engine		20.25	94.99	106.85	111.16	0	.004		
11		Silo	0.6		89.2	110.3	117.7	0	0		
12		Aero									
13		Base	0.4		131.8	100.0	100.0	0	0		
14	45	Interstage 2-3			122.28	59.98	100.23	101.10	.012	.007	
15		(Fwd)	Silo								
16		Aero									
17		Base	4.6		58.7	108.7	110.0	0	0		
18		Silo	1.7		61.7	100.4	100.6	0	0		
19		Jettisoned	Aero								
20		Portion	Base								
21		Jett	101.79		60.96	99.31	100.19	.011	.006		
22	45	Interstage 2-3			75.21	79.02	99.39	101.80	.008	.004	
23		(Aft)	Silo	2.6		81.2	100.6	101.0	0	0	
24		Aero									
25	46	2nd Stage Engine			39.40	149.97	105.39	109.37	.001	.021	
26		Silo	1.0		103.9	112.3	121.2	0	0		
27		Aero									
28		Base	3.3		187.7	100.0	100.0	0	0		
29	47	Interstage 1-2			252.17	67.40	99.83	101.01	.036	.023	
30		(Fwd)	Silo								
31		Aero									
32		Base	5.1		61.0	109.3	111.7	0	0		
33		Silo	4.9		67.2	100.0	100.0	.001	0		
34		Jettisoned	Aero								
35		Portion	Base	7.3		67.4	100.3	100.2	.001	.001	
36		Jett	214.50		68.77	99.07	100.38	.032	.020		
37	47	Interstage 1-2			136.93	96.45	101.25	100.85	.028	.016	
38		(Aft)	Silo	5.6		97.6	101.5	102.6	.001	.001	
39		Aero									
40	48	1st Stage Engine			58.04	219.47	110.69	118.40	.003	.107	
41		Silo	2.4		160.5	117.2	129.7	0	.002		
42		Aero									
43		Base	3.0		314.6	100.0	100.0	0	0		
44	49	Skirt			354.14	69.06	100.59	100.84	.088	.052	
45		Silo	32.0		67.9	100.1	100.2	.008	.005		
46		Aero									
47		Base	26.8		68.2	100.8	101.2	.007	.004		
48		MISSILE			1059.44						
49		Silo	50.8								
50		Aero									
51		Base	50.5								
52		Jett	316.29								

*Boeing Section Stations (See Missile Station Diagram)

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3.6 MISSILE NO. 731
WEIGHT AND BALANCE SUMMARY
MAJOR COMPONENTS S/N 0000183

REPORT NO.

DATE

LINE NO.	DESCRIPTION	DATA	EXPENDED WEIGHT (LB)	TOTAL WEIGHT (LB)	CENTER OF GRAVITY			INERTIA SLUG FT ² x 10 ⁻³	
					LONG.	LAT.	VERT.	ROLL	PITCH
1 41	RV Spacer								
2		Silo							
3		Aero							
4 39	CTLI Section								
5		Silo							
6		Aero							
7 42	G&C Section		1.02	80.9	100.0	100.0	0	0	0
8		Silo							
9		Aero							
10 44	3rd Stage Engine		20.13	94.77	106.90	111.23	0	.004	
11		Silo	0.6	89.2	110.3	117.7	0	0	
12		Aero							
13		Base	0.4	131.8	100.0	100.0	0	0	
14 45	Interstage 2-3			123.39	60.08	100.13	101.24	.012	.007
15	(Fwd)	Silo							
16		Aero							
17		Base	4.6	58.7	108.7	110.0	0	0	
18		Silo	1.7	61.7	100.4	100.6	0	0	
19	Jettisoned	Aero							
20	Portion	Base							
21		Jett	102.90	61.06	99.20	100.38	.011	.006	
22 45	Interstage 2-3			76.00	79.02	99.39	101.80	.008	.004
23	(Aft)	Silo	2.6	81.2	100.6	101.0	0	0	
24		Aero							
25 46	2nd Stage Engine			39.03	149.58	105.44	109.46	.001	.021
26		Silo	1.0	103.9	112.3	121.2	0	0	
27		Aero							
28		Base	3.3	87.7	100.0	100.0	0	0	
29 47	Interstage 1-2			253.24	67.39	99.98	101.43	.036	.023
30	(Fwd)	Silo							
31		Aero							
32		Base	5.1	61.0	109.3	111.7	0	0	
33		Silo	4.9	67.2	100.0	100.0	.001	0	
34	Jettisoned	Aero							
35	Portion	Base	7.3	67.4	100.3	100.2	.001	.001	
36		Jett	215.57	68.76	99.24	100.88	.032	.020	
37 47	Interstage 1-2			137.56	96.45	101.25	100.85	.028	.016
38	(Aft)	Silo	5.6	97.6	101.5	102.6	.001	.001	
39		Aero							
40 48	1st Stage Engine			58.09	219.56	110.68	118.38	.003	.107
41		Silo	2.4	160.5	117.2	129.7	0	.002	
42		Aero							
43		Base	3.0	314.6	100.0	100.0	0	0	
44 49	Skirt			351.59	69.18	100.67	100.70	.088	.052
45		Silo	32.0	67.9	100.1	100.2	.008	.005	
46		Aero							
47		Base	26.8	68.2	100.8	101.2	.007	.004	
48	MISSILE			1060.05					
49		Silo	50.8						
50		Aero							
51		Base	50.5						
52		Jett	318.47						

*Boeing Section Stations (See Missile Station Diagram)

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3.7 MISSILE NO. 745
WEIGHT AND BALANCE SUMMARY
MAJOR COMPONENTS S/N 0000184

REPORT NO.

DATE

LINE	SEC.	DESCRIPTION	DATA	EXPENDED WEIGHT (LB)	TOTAL WEIGHT (LB)	CENTER OF GRAVITY			INERTIA SLUG FT ² x 10 ⁻³	
						LONG.*	LAT.	VERT.	ROLL	PITCH
1	41	RV Spacer								
2			Silo							
3			Aero							
4	39	CTLI Section								
5			Silo							
6			Aero							
7	42	G&C Section			1.02	80.9	100.0	100.0	0	0
8			Silo							
9			Aero							
10	44	3rd Stage Engine			20.19	94.88	106.87	111.19	0	.004
11			Silo	0.6		89.2	110.3	117.7	0	0
12			Aero							
13			Base	0.4		131.8	100.0	100.0	0	0
14	45	Interstage 2-3			121.69	60.00	100.28	101.19	.012	.007
15		(Fwd)	Silo							
16			Aero							
17			Base	4.6		58.7	108.7	110.0	0	0
18			Silo	1.7		61.7	100.4	100.6	0	0
19		Jettisoned	Aero							
20		Portion	Base							
21			Jett	101.20		60.82	99.35	100.30	.011	.006
22	45	Interstage 2-3			74.80	79.02	99.39	101.80	.008	.004
23		(Aft)	Silo	2.6		81.2	100.6	101.0	0	0
24			Aero							
25	46	2nd Stage Engine			38.95	149.50	105.45	109.49	.001	.021
26			Silo	1.0		103.9	112.3	121.2	0	0
27			Aero							
28			Base	3.3		87.7	100.0	100.0	0	0
29	47	Interstage 1-2			253.15	67.64	99.81	101.31	.036	.023
30		(Fwd)	Silo							
31			Aero							
32			Base	5.1		61.0	109.3	111.7	0	0
33			Silo	4.9		67.2	100.0	100.0	.001	0
34		Jettisoned	Aero							
35		Portion	Base	7.3		67.4	100.3	100.2	.001	.001
36			Jett	215.48		69.05	99.03	100.73	.032	.020
37	47	Interstage 1-2			137.50	96.45	101.25	100.85	.028	.016
38		(Aft)	Silo	5.6		97.6	101.5	102.6	.001	.001
39			Aero							
40	48	1st Stage Engine			58.10	219.57	110.43	118.38	.003	.107
41			Silo	2.4		160.5	117.2	129.7	0	.002
42			Aero							
43			Base	3.0		314.6	100.0	100.0	0	0
44	49	Skirt			354.64	68.80	100.38	100.89	.088	.052
45			Silo	32.0		67.9	100.1	100.2	.008	.005
46			Aero							
47			Base	26.8		68.2	100.8	101.2	.007	.004
48		MISSILE			1060.04					
49			Silo	50.8						
50			Aero							
51			Base	50.5						
52			Jett	316.68						

*Boeing Section Stations (See Missile Station Diagram)

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MISSILE NO. 776

WEIGHT AND BALANCE SUMMARY
MAJOR COMPONENTS S/N 0000186

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LINE	SEC.	DESCRIPTION	DATA	EXPENDED WEIGHT (LB)	TOTAL WEIGHT (LB)	CENTER OF GRAVITY			INERTIA SLUG FT ² x10 ⁻³	
						LONG.*	LAT.	VERT.	ROLL	PITCH
1	41	RV Spacer								
2		Silo								
3		Aero								
4	39	CTLI Section								
5		Silo								
6		Aero								
7	42	G&C Section		1.02	80.9	100.0	100.0		0	0
8		Silo								
9		Aero								
10	44	3rd Stage Engine		20.14	94.78	106.89	111.22		0	.004
11		Silo	0.6		89.2	110.3	117.7		0	0
12		Aero								
13		Base	0.4		131.8	100.0	100.0		0	0
14	45	Interstage 2-3		121.66	60.11	100.60	101.02		.012	.007
15		(Fwd)	Silo							
16		Aero								
17		Base	4.6		58.7	108.7	110.0		0	0
18		Silo	1.7		61.7	100.4	100.6		0	0
19		Jettisoned	Aero							
20		Portion	Base							
21		Jett	101.17		61.12	99.74	100.09		.011	.006
22	45	Interstage 2-3		74.78	79.02	99.39	101.80		.008	.004
23		(Aft)	Silo	2.6	81.2	100.6	101.0		0	0
24		Aero								
25	46	2nd Stage Engine		38.84	149.38	105.47	109.51		.001	.021
26		Silo	1.0		103.9	112.3	121.2		0	0
27		Aero								
28		Base	3.3		87.7	100.0	100.0		0	0
29	47	Interstage 1-2		254.19	67.51	99.78	101.10		.036	.023
30		(Fwd)	Silo							
31		Aero								
32		Base	5.1		61.0	109.3	111.7		0	0
33		Silo	4.9		67.2	100.0	100.0		.001	0
34		Jettisoned	Aero							
35		Portion	Base	7.3		67.4	100.3	100.2	.001	.001
36		Jett	216.52		68.89	99.00	100.49		.032	.020
37	47	Interstage 1-2		138.11	96.45	101.25	100.85		.028	.016
38		(Aft)	Silo	5.6	97.6	101.5	102.6		.001	.001
39		Aero								
40	48	1st Stage Engine		58.12	219.61	110.68	118.38		.003	.107
41		Silo	2.4		60.5	117.2	129.7		0	.002
42		Aero								
43		Base	3.0		314.6	100.0	100.0		0	0
44	49	Skirt		348.74	69.12	100.66	100.71		.088	.052
45		Silo	32.0		67.9	100.1	100.2		.008	.005
46		Aero								
47		Base	26.8		68.2	100.8	101.2		.007	.004
48		MISSILE		1055.6						
49		Silo	50.8							
50		Aero								
51		Base	50.5							
52		Jett	317.69							

#Boeing Section Stations (See Missile Station Diagram)

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3.9 MISSILE NO. 816
WEIGHT AND BALANCE SUMMARY
MAJOR COMPONENTS S/N 0000182

REPORT NO.

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LINE	SEC.	DESCRIPTION	DATA	EXPENDED WEIGHT (LB)	TOTAL WEIGHT (LB)	CENTER OF GRAVITY			INERTIA SLUG FT ² x 10 ⁻³	
						LONG.	LAT.	VERT.	ROLL	PITCH
1	41	RV Spacer								
2		Silo								
3		Aero								
4	39	CTLI Section								
5		Silo								
6		Aero								
7	42	G&C Section		1.02	80.9	100.0	100.0	0	0	
8		Silo								
9		Aero								
10	44	3rd Stage Engine			20.22	94.94	106.86	111.18	0	.004
11		Silo	0.6		89.2	110.3	117.7	0	0	
12		Aero								
13		Base	0.4		131.8	100.0	100.0	0	0	
14	45	Interstage 2-3			122.19	60.15	100.39	101.18	.012	.007
15		(Fwd)	Silo							
16		Aero								
17		Base	4.6		58.7	108.7	110.0	0	0	
18		Silo	1.7		61.7	100.4	100.6	0	0	
19		Jettisoned	Aero							
20		Portion	Base							
21		Jett	101.70		61.16	99.50	100.29	.011	.006	
22	45	Interstage 2-3			75.15	79.02	99.39	101.80	.008	.004
23		(Aft)	Silo	2.6	81.2	100.6	101.0	0	0	
24		Aero								
25	46	2nd Stage Engine			38.94	149.49	105.45	109.48	.001	.021
26		Silo	1.0		103.9	112.3	121.2	0	0	
27		Aero								
28		Base	3.3		187.7	100.0	100.0	0	0	
29	47	Interstage 1-2			253.62	67.49	99.80	101.05	.036	.023
30		(Fwd)	Silo							
31		Aero								
32		Base	5.1		61.0	109.3	111.7	0	0	
33		Silo	4.9		67.2	100.0	100.0	.001	0	
34		Jettisoned	Aero							
35		Portion	Base	7.3		67.4	100.3	100.2	.001	.001
36		Jett	215.95		68.88	99.02	100.43	.032	.020	
37	47	Interstage 1-2			137.78	96.45	101.25	100.85	.028	.016
38		(Aft)	Silo	5.6	97.6	101.5	102.6	.001	.001	
39		Aero								
40	48	1st Stage Engine			57.99	219.39	110.70	116.42	.003	.107
41		Silo	2.4		160.5	117.2	129.7	0	.002	
42		Aero								
43		Base	3.0		314.6	100.0	100.0	0	0	
44	49	Skirt			351.24	68.96	100.73	100.82	.088	.052
45		Silo	32.0		67.9	100.1	100.2	.008	.005	
46		Aero								
47		Base	26.8		68.2	100.8	101.2	.007	.004	
48		MISSILE			1058.15					
49		Silo	50.8							
50		Aero								
51		Base	50.5							
52		Jett	317.65							

*Boeing Section Stations (See Missile Station Diagram)

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3.10 MISSILE NO. 858
WEIGHT AND BALANCE SUMMARY
MAJOR COMPONENTS S/N 0000185

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LINE	SEC.	DESCRIPTION	DATA	EXPENDED WEIGHT (LB)	TOTAL WEIGHT (LB)	CENTER OF GRAVITY			INERTIA SLUG FT ² x 10 ⁻³	
						LONG.	LAT.	VERT.	ROLL	PITCH
1	41	RV Spacer								
2			Silo							
3			Aero							
4	39	CTL/I Section								
5			Silo							
6			Aero							
7	42	G&C Section		1.02	80.9	100.0	100.0	0	0	
8			Silo							
9			Aero							
10	44	3rd Stage Engine		20.18	94.86	106.88	111.20	0	.004	
11			Silo	0.6	89.2	110.3	117.7	0	0	
12			Aero							
13			Base	0.4	131.8	100.0	100.0	0	0	
14	45	Interstage 2-3			122.07	59.87	100.33	101.23	.012	.007
15		(Fwd)	Silo							
16			Aero							
17			Base	4.6	58.7	108.7	110.0	0	0	
18			Silo	1.7	61.7	100.4	100.6	0	0	
19		Jettisoned Portion	Aero							
20			Base							
21			Jett	101.58	60.83	99.43	100.35	.011	.006	
22	45	Interstage 2-3			75.07	79.02	99.39	101.80	.008	.004
23		(Aft)	Silo	2.6	81.2	100.6	101.0	0	0	
24			Aero							
25	46	2nd Stage Engine			38.87	149.41	105.46	109.50	.001	.021
26			Silo	1.0	103.9	112.3	121.2	0	0	
27			Aero							
28			Base	3.3	187.7	100.0	100.0	0	0	
29	47	Interstage 1-2			254.63	67.45	99.98	101.23	.036	.023
30		(Fwd)	Silo							
31			Aero							
32			Base	5.1	61.0	109.3	111.7	0	0	
33			Silo	4.9	67.2	100.0	100.0	.001	0	
34		Jettisoned Portion	Aero							
35			Base	7.3	67.4	100.3	100.2	.001	.001	
36			Jett	216.96	68.82	99.25	100.64	.032	.020	
37	47	Interstage 1-2			138.37	96.45	101.25	100.85	.028	.016
38		(Aft)	Silo	5.6	97.6	101.5	102.6	.001	.001	
39			Aero							
40	48	1st Stage Engine			58.09	219.56	110.68	118.38	.003	.107
41			Silo	2.4	160.5	117.2	129.7	0	.002	
42			Aero							
43			Base	3.0	314.6	100.0	100.0	0	0	
44	49	Skirt			350.09	69.02	100.70	100.96	.088	.052
45			Silo	32.0	67.9	100.1	100.2	.008	.005	
46			Aero							
47			Base	26.8	68.2	100.8	101.2	.007	.004	
48		MISSILE			1058.39					
49			Silo	50.8						
50			Aero							
51			Base	50.5						
52			Jett	318.54						

*Boeing Section Stations (See Missile Station Diagram)

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3.11 WEIGHT AND BALANCE SUMMARY MEAN WEIGHT COMPONENTS** (APPLICABLE TO ALL MISSILES)					REPORT NO. _____					
LINE	SEC	DESCRIPTION	DATA	EXPENDED WEIGHT (LB)	TOTAL WEIGHT (LB)	CENTER OF GRAVITY			INERTIA SLUG FT ² X10 ⁻³	
						LONG.*	LAT.	VERT.	ROLL	PITCH
1	41	RV Spacer								
2			Silo							
3			Aero							
4	39	CTLI Section								
5			Silo							
6			Aero							
7	42	G&C Section			1.02	80.9	100.0	100.0		
8			Silo							
9			Aero							
10	44	3rd Stage Engine			14.02	78.05	109.90	116.12		
11			Silo							
12			Aero							
13			Base							
14	45	Interstage 2-3 (Fwd)			20.43	59.50	105.46	107.81		
15			Silo							
16			Aero							
17			Base							
18			Silo							
19		Jettisoned Portion	Aero							
20			Base							
21			Jett	9.44		61.56	101.4	104.88		
22	45	Interstage 2-3 (Aft)			8.16	81.65	99.34	98.49		
23			Silo							
24			Aero							
25	46	2nd Stage Engine			18.48	103.86	111.49	119.98		
26			Silo							
27			Aero							
28			Base							
29	47	Interstage 1-2 (Fwd)			23.65	64.87	105.68	111.26		
30			Silo							
31			Aero							
32			Base							
33			Silo							
34		Jettisoned Portion	Aero							
35			Base							
36			Jett	10.78		68.79	97.93	108.77		
37	47	Interstage 1-2 (Aft)			10.00	97.15	103.19	102.75		
38			Silo							
39			Aero							
40	48	1st Stage Engine			36.70	161.96	116.91	129.10		
41			Silo							
42			Aero							
43			Base							
44	49	Skirt			13.19	62.52	105.50	109.22		
45			Silo							
46			Aero							
47			Base							
48		MISSILE			145.65					
49			Silo							
50			Aero							
51			Base							
52			Jett							

* Boeing Section Stations (See Missile Diagram)

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** See Check List on Page 20
for details.

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**ENGINEERING CHANGE PROPOSAL (ECP) INCORPORATION
APPLICABLE TO WING I MISSILES 708 THROUGH 858**

The following ECP's have not been incorporated into "Modal Specification Guided Missile Main Assemblage (S-133-1000)" Dated 12 March 1962 and amended by SCN 1 through SCN 8. However, the mass properties of these ECP's have been incorporated into this report unless otherwise noted.

ECP NO. (WS-133A-BO-)	ECP TITLE	STAGE	WEIGHT CHANGE	WEIGHT CHANGE INCORPORATED IN THIS REPORT
116-9	Linear Shaped Charge Destruct System - First Stage Engine	2	-.1	Yes
173	Cancellation of MRCN 6012	3	-.6	Yes
201	First Stage Thermal Insulation Revision-Operational Wing I Missiles	1	-1.4	Yes
232	Interstage Compatibility for CTLI Kit	All	Negl.	Yes
233	Provisioning of Lower Raceway Foam-First Stage Engine	1	-.4	Yes
236	Second Stage CTLI and Operational Raceway Foam Revisions	2	Negl.	Yes
259	Removal of Ramps from Stage I Forward Joint - Operational Wing I	1	-1.8	Yes
265	Lengthen Attach Bolts for Stage I Aft Raceway Cap	1	Negl.	Yes
277	Removal of Ramps from Second Stage Engine - Wing I Operational	2	-2.6	Yes
287	Boeing Support of Hercules Ignitor Basket Change	3	Negl.	Yes
326	Insulation of Autonetics Connector on Stage III Operational Pressure Transducer	3	Negl.	Yes
372	Insulation of Ordnance at R/W Cutout 1-2 and 2-3 Interstages	2&3	Negl.	Yes
540	Potting and Bonding Deletion for Vandenberg Air Force Base Missiles	1,2,3	-	No*

* ECP 540 postpones the potting of certain components on scheduled CTLI missiles until final installation at Vandenberg Air Force Base. Since the potting is considered part of the operational weight, its mass properties are still included in this report even though it will be applied at VAFB.

6.1.1 WEIGHT AND BALANCE CHANGE RECORD

ASSOCIATE CONTRACTOR	BOEING	CONTRACT NO.	AFO4(694)-046	REPORT NO.	OPR-2039
COMPONENT	INTERSTAGE 2-3	LOT NO.		DATE	4/12/63
MODEL NO.	WS-133	DRAWING NO.	25-27204-64	PREPARED	T. VOGEL
SERIAL NO.	0000160	I.O. MISSILE	708	APPROVED	G. ROBERTS

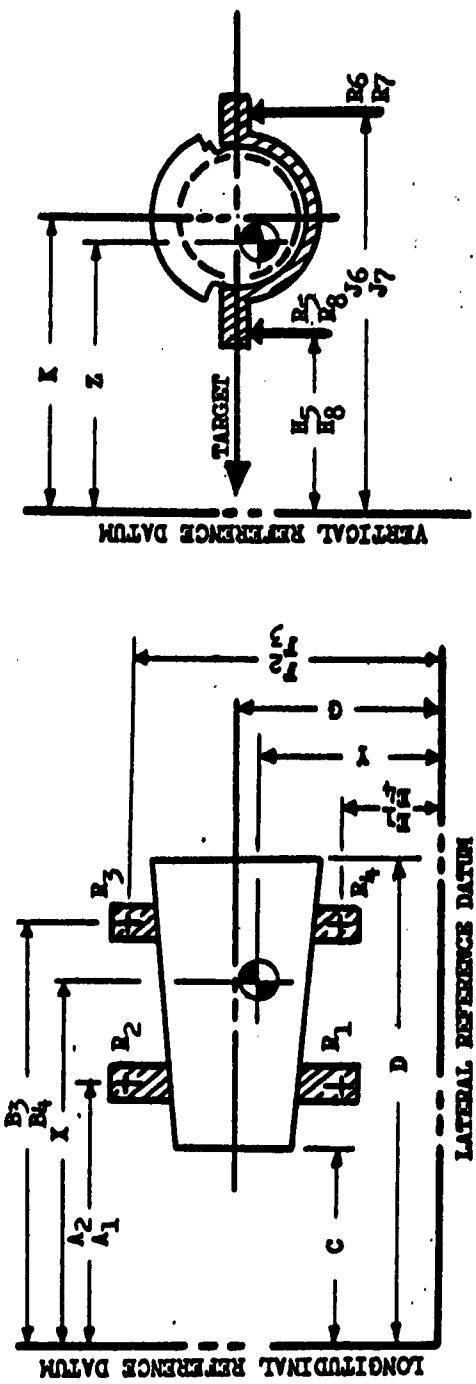
EQUIPMENT CHANGE RECORD

LINE	PART NO.	DESCRIPTION OF EQUIPMENT	WEIGHT AND BALANCE					
			WEIGHT	X AXIS	Y AXIS	Z AXIS	ARM	ARM
1								
2	25-27204-64	Body Section (As Weighed)	169.20	67.52	11.424.8	99.28	16,798.0	100.86
3								
4								
5	ADD:		0					
6								
7								
8	DEDUCT:		0					
9								
10								
11	25-27204-64	Body Section (Complete)	169.20	67.52	11.424.8	99.28	16,798.0	100.86
12								
13								
14								
15								
16								
17								
18								
19								
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2-5550-0-11 R1

BOEING NO. D2-13944-708
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SERIAL NO.	0000160	6.1.1	ACTUAL WEIGHT RECORD - INTERSTAGE	2-3	REPORT NO.	OPR-2039	
V/O MISSILE	708	DRAWING NO.	25-27204-64	CHECK LIST NO.	5	PAGE NO.	
MISSILE MODEL	WS-133	REPORTED BY	RS/JH/FV	CHECKED BY	GVR	DATE	
CONFIGURATION	TAH	DCN	H	39			



6.1.1 ACTUAL WEIGHT RECORD - INTERSTAGE 2-3

REPRODUCING WD. 25-27204-64
CROWN KING MINE. CROWN KING MINE.

MISSILE MODEL WS-133
CONFIGURATION TAH

The diagram illustrates a four-quadrant motor driver circuit. The power supply is connected to the top rail. On the left side, there are four shunt resistors labeled R_1 through R_4 , which are connected to the bottom rail. These resistors are used to sense the currents A_1 through A_4 . The currents A_1 and A_2 are summed at node X, while A_3 and A_4 are summed at node Y. The outputs from nodes X and Y are fed into a central summing junction. The output of this junction is connected to a current source, represented by a circle with a dot. The output of the current source is connected to the bottom rail. On the right side, there are two shunt resistors labeled R_5 and R_6 , connected between the top rail and the bottom rail. The currents B_1 and B_2 flow through R_5 , and the currents B_3 and B_4 flow through R_6 . The outputs from nodes X and Y are also connected to the inputs of a logic block labeled "LAWAAR REFERENCE LOGIC". The logic block has three outputs: one to the current source, one to a switch labeled "D", and one to a switch labeled "C". The switch "D" connects the bottom rail to the top rail, and the switch "C" connects the bottom rail to ground.

VEHICLING DATA

WEIGHING DATA							DIMENSIONAL DATA					
REACTION	GR. WT.	TARE	CORR.	NET WT.	REACTION	GR. WT.	TARE	CORR.	NET WT.	DIM. INCHES	DIM. INCHES	DIM. INCHES
R1	141.10	94.60		46.50	R5	126.00		88.55		37.45	A1	47.34-31
R2	80.80	41.35		39.45	R6	95.80		47.45		48.35	A2	48.35-34
R3	136.10	94.00		42.10	R7	127.75		87.85		39.90	B3	88.35-31
R4	82.35	41.20		41.15	R8	90.80		47.30		43.50	B4	88.35-31
TOTAL	440.35	271.15		169.20	TOTAL	440.35		271.15		169.20	C	50.000
											D	88.35-31

LATERAL C.G.

VERTICAL C.G.

REACTION	NET WT.	ARM	MOMENT	REACTION	NET WT.	ARM	MOMENT	REACTION	NET WT.	ARM	MOMENT
R1	46.50	47.243		R1	46.50	80.000		R5	37.45	80.000	
R2	32.45	47.324		R2	32.45	120.000		R6	48.35	120.000	
R3	42.10	88.351		R3	42.10	119.999		R7	39.90	119.999	
R4	41.15	88.351		R4	41.15	80.000		R8	43.50	80.000	
AS WGD	169.20	67.52	11,244.8	AS WGD	169.20	99.28	16,798.0	AS WGD	169.20	100.86	17,066.0

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BOEING

NO.D2-13944-708

FIG. 6A NUMBER: 6501

SIGNAL NUMBER: 0000160

ITEM NUMBER	DESCRIPTION	PART NO.	MISSILE			LAUNCH AS WEIGHED REMOTE SITE			
			MISSILE						
			WEIGHT	X ARM	Z ARM				
<u>MISSILE NO. 708</u>									
<u>MISSILE COMPONENT BODY SECTION GUIDED MISSILE COMPONENT PART NO. Noted</u>									
15									
1	BODY SECTION ASSY	25-27204-34							
2	Interstage Assy - Structural	25-27203-13							
3	Instr Rack & Accelerometer	25-31659-4							
4	Mechng Insttl - Section 45	25-30134-							
5	Cover - Insulating	29-25598-1							
6	Cover - Insulating	29-24652-1							
7	Cover - Insulating	(6) 29-23365-1							
8	Cover - Insulating	29-23365-2							
9	Cover - Insulating	29-23365-3							
10	Cover - Insulating	29-23365-4							
11	Cover - Insulating	29-23365-5							
12	Cover - Insulating	29-23365-6							
13	Seal - Forward	(2) 29-23674-1							
14	Shield - Amplifier	29-23713-1							
15	Door - Access, Amplifier	29-23713-2							
16	Door - Access, Detonator	26-11676-1							
17	Door - Access, Ignitor Stage III	26-11885-1							
18	Door - Access, Detonator	26-12909-1							
19	Door - Access, Ordnance	(3) 29-22673-1							
20	Closure Panel - Access, Ordnance	29-22672-1							
21	Door - Access, Ignitor Stage II	29-22361-1							
22	Closure Panel - Access, Booster Sdrt	29-22081-3							
23	Bolt - 1000 Head	(2) BACB30EY-3-3							
24	Bolt - 1000 Head	(6) BACB30EY-3-1							
25	Bolt - 1000 Head	(11) BACB30EY-4-1							
26	Bolt - 1000 Head	(8) BACB30EY-4-7							
27	Bolt - 1000 Head	(30) BACB30EY-4-10							
28	Bolt - 1000 Head	(6) BACB30EY-3-3							
29	Bolt - 1000 Head	BACB30EY-3-6							

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BOEING

NOD2-13944-708

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FIG. 1A NUMBER: 6501 SERIAL NUMBER: 0000160

ITEM NUMBER	CHECK LIST NO.	DATE	MISSILE WEIGHING CHECK LIST			RECORD OF CHECKING (DATE)		
			SECTION	MISSILE NO.	FINAL ASSEMBLY DRAWING NO.	Mo	Day	Yr
<u>MISSILE COMPONENT BODY SECTION GUIDED MISSILE COMPONENT PART NO. Noted</u>								
ITEM NUMBER	DESCRIPTION	PART NO.	WEIGHT	X ARM	Y ARM	Z ARM		
BODY SECTION ASSY (Continued)								
Bolt - 1000 Head	(6) BACHBORN-4-4			x	x			
Bolt - 1000 Head	(3) BACHBORN-4-5			x	x			
Bolt - 1000 Head	(2) BACHBORN-4-12			x	x			
Insulation	BRS 5-62			x	x			
	▷ BRS 5-62			x	o			
STRUCTURE WEIGHT:								
AVCOAT WEIGHT:								
BRS 5-62 WEIGHT:								
LAUNCH								
AS RECEIVED								
REMOTE SITE								
AS SHIPPED								
REMOTE SITE								
SHIPPED								
MISSILE								

2-5550-0-21

BOEING

NO. D2-13944-708

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6.1.2 WEIGHT AND BALANCE CHANGE RECORD

ASSOCIATE CONTRACTOR	BOEING	CONTRACT NO.	AFO4(694)-046	REPORT NO.	OPR-2041
COMPONENT	INTERSTAGE 2-3	LOT NO.		DATE	4/12/63
MODEL NO.	WS-133	DRAWING NO.	25-27204-64	PREPARED	R. ST. DOMAIN
SERIAL NO.	0000161	U.O. MISSILE	T13	APPROVED	G. ROBERTS

EQUIPMENT CHANGE RECORD

PART NO.	DESCRIPTION OF EQUIPMENT	WEIGHT AND BALANCE					
		WEIGHT	X AXIS ARM	Y AXIS ARM	Z AXIS ARM	X AXIS MOMENT	Y AXIS MOMENT
1	25-27204-64 Body Section (As Weighed)	168.95	67.54	11,411.0	99.14	16,750.0	100.76
2							
3							
4							
5	ADD:	0					
6							
7	REDUCT:	0					
8							
9							
10							
11	25-27204-64 Body Section (Complete)	168.95	67.54	11,411.0	99.14	16,750.0	100.76
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
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6.1.3 WEIGHT AND BALANCE CHANGE RECORD

ASSOCIATE CONTRACTOR BOEING
 INTERSTAGE 2-3
 WS-133
 MODEL NO.
 0000162
 SERIAL NO.

CONTRACT NO. AF 04(694)-046
 LOT NO. 25-27204-64
 DRAWING NO. U.O. MISSILE 215

REPORT NO. OPR-2042
 DATE 4-16-63
 PREPARED J. HILL,
 APPROVED G. ROBERTS

EQUIPMENT CHANGE RECORD

LINE	PART NO.	DESCRIPTION OF EQUIPMENT	WEIGHT AND BALANCE					
			WEIGHT	X AXIS ARM	X AXIS MOMENT	Y AXIS ARM	Y AXIS MOMENT	Z AXIS ARM
1								
2	25-27204-64	Body Section (As Weighed)	167.75	67.55	11,331.6	99.26	16,650.0	101.04
3								
4								
5	ADD:		0					
6								
7								
8	DEDUCT:		0					
9								
10								
11	25-27204-64	Body Section (Complete)	167.75	67.55	11,331.6	99.26	16,650.0	101.04
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
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BOEING NO. D2-13944-708
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6.1.4 WEIGHT AND BALANCE CHANGE RECORD

ASSOCIATE CONTRACTOR	BOEING	CONTRACT NO.	AFO4(694)-046	REPORT NO.	OPR-2043
COMPONENT	INTERSTAGE 2-3	LOT NO.		DATE	4/19/63
MODEL NO.	WS-133	DRAWING NO.	25-27204-64	PREPARED	JIM HILL
SERIAL NO.	0000163	U.O. MISSILE	T1	APPROVED	G. ROBERTS

ITEM	DESCRIPTION OF EQUIPMENT	WEIGHT AND BALANCE					
		WEIGHT	X AXIS ARM	X AXIS MOMENT	Y AXIS ARM	Y AXIS MOMENT	Z AXIS ARM
1							
2	25-27204-64 Body Section (As Weighed)	168.90	67.47	11,396.3	99.27	16,766.0	100.72
3							
4							
5	ADD:	0					
6							
7							
8	DEDUCT:	0					
9							
10							
11	25-27204-64 Body Section (Complete)	168.90	67.47	11,396.3	99.27	16,766.0	100.72
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
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6.1.5 WEIGHT AND BALANCE CHANGE RECORD

ASSOCIATE CONTRACTOR BOEING	CONTRACT NO.	AF 04(694)-046	REPORT NO.	OPR-2040
INTERSTAGE 2-3	LOT NO.		DATE	4-18-63
WS-135	DRAWING NO.	25-27204-64	PREPARED	J. HILL
0000181	U.O. MISSILE	710	APPROVED	G. ROBERTS

EQUIPMENT CHANGE RECORD

LINE	PART NO.	DESCRIPTION OF EQUIPMENT	WEIGHT AND BALANCE					
			WEIGHT	X AXIS	Y AXIS	Z AXIS	ARM	ARM
1								
2	25-27204-64	Body Section (As Weighed)	170.60	67.56	11.528.0	99.16	16.916.0	100.95
3								
4								
5	ADD:		0					
6								
7								
8	DEDUCT:		0					
9								
10								
11	25-27204-64	Body Section (Complete)	170.60	67.56	11.528.0	99.16	16.916.0	100.95
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
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32								

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6.1.6 WEIGHT AND BALANCE CHANGE RECORD

ASSOCIATE CONTRACTOR BOEING CONTRACT NO. AF04(694)-046
 COMPONENT INTERSTAGE 2-3 LOT NO. 4/22/63
 MODEL NO. WS-133 DRAWING NO. 25-27204-64
 SERIAL NO. 000001&2 U.O. MISSILE Q16

REPORT NO. OPR-2047
 PREPARED W. BAIRD
 APPROVED G. ROBERTS

EQUIPMENT CHANGE RECORD

LINE	PART NO.	DESCRIPTION OF EQUIPMENT	WEIGHT AND BALANCE					
			WEIGHT	X AXIS ARM	Y AXIS ARM	Z AXIS ARM	moment	moment
1	25-27204-64	Body Section (As Weighed)	168.75	67.59	11,405.5	99.38	16,770.0	100.78
2								17,060.0
3								
4								
5								
6								
7								
8								
9								
10								
11	25-27204-64	Body Section (Complete)	168.75	67.59	11,405.5	99.38	16,770.0	100.78
12								17,060.0
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
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BOEING NO. D2-13944-708
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6.1.7 WEIGHT AND BALANCE CHANGE RECORD

ASSOCIATE CONTRACTOR	BOEING	CONTRACT NO.	AFO4(694)-046	REPORT NO.	OPR-204
COMPONENT	INTERSTAGE 2-3	LOT NO.		DATE	6/19/63
MODEL NO.	MS-133	DRAWING NO.	25-27204-64	PREPARED	W. PAINE
SERIAL NO.	00000183	U.O. MISSILE	T31	APPROVED	G. ROBERTS

EQUIPMENT CHANGE RECORD

LINE	PART NO.	DESCRIPTION OF EQUIPMENT	WEIGHT AND BALANCE					
			WEIGHT	X AXIS ARM	X AXIS MOMENT	Y AXIS ARM	Y AXIS MOMENT	Z AXIS ARM
1								
2	25-27204-64	Body Section (As Weighed)	170.80	67.54	11,535.3	99.20	16,944.0	100.84
3								
4								
5	AUD:		0					
6								
7								
8	DEDUCT:		0					
9								
10								
11	25-27204-64	Body Section (Complete)	170.80	67.54	11,535.3	99.20	16,944.0	100.84
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
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32								

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WEIGHT AND BALANCE CHANGE RECORD						
ASSOCIATE CONTRACTOR	BOEING	CONTRACT NO.	AFO4(694)-046	REPORT NO.	OFR-2045	
COMPONENT	INTERSTAGE 2-3	LOT NO.		DATE	4/23/63	
MODEL NO.	MS-133	DRAWING NO.	25-27204-64	PREPARED	W. BAIRD	
SERIAL NO.	0000184	U.O. MISSILE	745	APPROVED	G. ROBERTS	
EQUIPMENT CHANGE RECORD			WEIGHT AND BALANCE			
ENT	PART NO.	DESCRIPTION OF EQUIPMENT	WEIGHT	X AXIS ARM	Y AXIS ARM	Z AXIS ARM
1	25-27204-64	Body Section (As Weighed)	167.90	67.48	11,330.5	99.30
2					16,672.0	100.79
3						16,922.0
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
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6.1.9 WEIGHT AND BALANCE CHANGE RECORD

ASSOCIATE CONTRACTOR	BOEING	CONTRACT NO.	AIR04(694)-046	REPORT NO.	OPR-2048
COMPONENT	INVERSE STAGE 2-3	LOT NO.		DATE	4/25/63
MODEL NO.	WS-133	DRAWING NO.	25-27204-64	PREPARED	W. BAIRD
SERIAL NO.	0000185	U.O. MISSILE	858	APPROVED	G. ROBBINS

LINE	PART NO.	DESCRIPTION OF EQUIPMENT	WEIGHT AND BALANCE					
			WEIGHT	X AXIS ARM	X AXIS MOMENT	Y AXIS ARM	Y AXIS MOMENT	Z AXIS ARM
1	25-27204-64	Body Section (As Weighed)	168.55	GT.39	11,359.1	99.34	16,744.0	100.82
2								16,924.0
3								
4								
5		ADD:	0					
6								
7								
8		REDUCT:	0					
9								
10								
11		25-27204-64 Body Section (Complete)	168.55	GT.39	11,359.1	99.34	16,744.0	100.82
12								16,924.0
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
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31								

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BOEING | NO. D2-13944-708
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6.1.10 WEIGHT AND BALANCE CHANGE RECORD

ASSOCIATE CONTRACTOR	BOEING	CONTRACT NO.	AFO4(694)-046
COMPONENT	INTERSTAGE 2-3	LOT NO.	
MODEL NO.	MS-133	DRAWING NO.	25-27204-64
SERIAL NO.	0000186	U.O. MISSILE	776

REPORT NO. OPR-2946
 DATE 4/19/63
 PREPARED W. BAIRD
 APPROVED G. ROBERTS

EQUIPMENT CHANGE RECORD

LINE	PART NO.	DESCRIPTION OF EQUIPMENT	WEIGHT AND BALANCE				
			WEIGHT	X AXIS	Y AXIS	Z AXIS	
1			ARM	ARM	ARM	ARM	ARM
1	25-27204-64	Body Section (As Weighed)	167.85	67.56	11,340.4	99.53	16,706.0
2							
3							
4							
5		ADD:	0				
6							
7							
8		DEDUCT:	0				
9							
10							
11	25-27204-64	Body Section (Complete)	167.85	67.56	11,340.4	99.53	16,706.0
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
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BOEING NO D2-13944-708
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6.2.1 WEIGHT AND BALANCE CHANGE RECORD

ASSOCIATE CONTRACTOR	BOEING	CONTRACT NO.	AFO4(694)-046	REPORT NO.	OFR-2039
COMPONENT	INTERSTAGE 1-2	LOT NO.		DATE	4/22/63
MODEL NO.	MS-133	DRAWING NO.	25-27201-11	PREPARED	T. VOELK
SERIAL NO.	0000160	U.O. MISSILE	T08	APPROVED	G. ROBERTS

LINE ITEM	DESCRIPTION OF EQUIPMENT	WEIGHT AND BALANCE					
		WEIGHT	X AXIS ARM	X AXIS MOMENT	Y AXIS ARM	Y AXIS MOMENT	Z AXIS ARM
1							
2	25-27201-11 Body Section (As Weighed)	362.20	77.80	28,180.3	100.88	36,250.5	100.07
3							
4							
5	ADD:	0					
6							
7							
8	DEDUCT:	0					
9							
10							
11	25-27201-11 Body Section (Complete)	362.20	77.80	28,180.3	100.88	36,250.5	100.07
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							
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31							
32							

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SERIAL NO. 0000160	6.2.1 ACTUAL WEIGHT RECORD - INTERSTAGE 1-2		
U/O MISSILE 708	DRAWING NO. 25-27201-11	CHECK LIST NO. 7	REPORT NO. OPR-2039
MISSILE MODEL WS-133	REPORTED BY WB/JH/TV	PAGE NO. 1	PAGE NO. 4/22/63
CONFIGURATION TAH	CHECKED BY GVR		

VERTICAL REFERENCE DATUM

LATERAL REFERENCE DATUM

LONGITUDINAL REFERENCE DATUM

A1 A2 A3 A4
B1 B2 B3 B4

X Y Z

TARGET

WEIGHING DATA

REACTION	GR. WT.	TARE	CORR.	NET WT.	REACTION GR. WT.	TARE	CORR.	NET WT.
R1	198.00	107.40		90.60	B5	277.95	181.15	96.80
R2	217.15	119.00		98.15	B6	136.80	45.00	91.80
R3	173.70	90.25		83.45	B7	253.70	164.00	89.70
R4	191.95	101.95		90.00	B8	112.35	28.45	83.90
TOTAL	780.80	418.60		362.20		780.80	418.60	362.20

WEIGHTING DATA

REACTION	GR. WT.	TARE	CORR.	NET WT.	REACTION GR. WT.	TARE	CORR.	NET WT.		
R1	90.60	49.072		R1	90.60	70.001		R5	96.80	70.001
R2	98.15	49.070		R2	98.15	130.002		R6	91.80	130.002
R3	83.45	109.070		R3	83.45	130.000		R7	89.70	130.000
R4	90.00	109.070		R4	90.00	70.002		R8	83.90	70.002
AS WGD	362.20	77.80		28.180.3		362.20	100.08	36.250.5		

DIMENSIONAL DATA

REACTION	GR. WT.	TARE	CORR.	NET WT.	DIM. INCHES	DIM. INCHES	DIM. INCHES	DIM. INCHES	
R1	90.60	49.072		R1	49.072	E1	70.001	E5	70.001
R2	98.15	49.070		R2	49.070	E4	70.002	E6	70.002
R3	83.45	109.070		R3	109.070	F2	130.002	J6	130.002
R4	90.00	109.070		R4	109.070	F3	130.000	J7	130.000
AS WGD	362.20	77.80		C	50.00	G	100.000	K	100.000
				D					

VERTICAL C.G.

REACTION	NET WT.	ARM	MOMENT	REACTION	NET WT.	ARM	MOMENT
R1	90.60	49.072		R1	90.60	70.001	
R2	98.15	49.070		R2	98.15	130.002	
R3	83.45	109.070		R3	83.45	130.000	
R4	90.00	109.070		R4	90.00	70.002	
AS WGD	362.20	77.80		AS WGD	362.20	100.07	36.244.4

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FIG. 1A REVERSED: 6701 SERIAL NUMBER: 0000160

6.2.1 MISSILE WEIGHING CHECK LIST

MODEL WS-133 FINAL ASSEMBLY DRAWING NO. 21-501

CHECK LIST NO.	6.2.1 MISSILE WEIGHING CHECK LIST			RECORD OF CHECKING (DATE)		
	DATE	MODEL WS-133	FINAL ASSEMBLY DRAWING NO. 21-50150	No	4	
				Day	22	
ITEM NUMBER	SECTION 47	MISSILE NO. 708	NOTED	Y ARM	Z ARM	
<u>MISSILE COMPONENT SECTION GUIDED MISSILE COMPONENT PART NO.</u>				WEIGHT	X ARM	
<u>MISSILE SITE</u>				BASIC WEIGHT	WEIGHT	
<u>SHIPMENT AS RECEIVED</u>				AS RECEIVED	WEIGHT	
<u>REMOTE SITE</u>				AS REMOTE SITE	WEIGHT	
<u>LAUNCH AS SHIPPED</u>				AS SHIPPED	WEIGHT	
<u>MISSILE</u>				MISSILE	WEIGHT	
DESCRIPTION	PART NO.	WEIGHT	WEIGHT	X ARM	Y ARM	Z ARM
BODY SECTION ASSY	25-27201-11			-	-	-
Interstage Assy - Structural Seal	25-27200-21			X	X	X
Seal	25-27201-4			X	X	X
Seal	25-27201-5			X	X	X
Seal	25-27201-6			X	X	X
Seal	25-27201-7			X	X	X
Shield - Assy of Insulated	25-27201-8			-	-	-
Shield - Tins Delay Booster	25-29544-1			X	X	X
Door - Access, Stage Separation	26-11886-1			X	X	X
Door - Access, Booster	26-11838-1			X	X	X
Door Assy - Safe & Arm	29-20567-1			X	X	X
Door - Ordnance Access	(4) 29-20607-1			X	X	X
Door - Ordnance (Chem-timer) Assy of	29-22311-1			X	X	X
Cover - Panel Tie	(4) 29-23651-1			X	X	X
Cover - Panel Tie	(4) 29-23651-2			X	X	X
Plug - Access Hole	29-23663-2			X	X	X
Panel - Insulation	29-25565-1			X	X	X
Door - CTL Equipment Access	25-30938-1			X	X	X
Panel - Insulation	25-33081-1			X	X	X
Marking Instl - Section 17	25-20131-2			X	X	X
Cover - Receptacle	29-22725-1			X	X	X
Cover - Receptacle	29-22725-2			X	X	X
Cover - Receptacle	29-22725-3			X	X	X
Bolt - 100° Head	BACH30E1-3-8					
Bolt - 100° Head	(33) BACH30E1-4-11					
Bolt - 100° Head	BACH30E1-4-9					
Bolt - 100° Head	(6) BACH30E1-4-5					
Bolt - 100° Head	(7) BACH30E1-2-1					
Bolt - 100° Head	(4) BACH30E1-2-3					

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BOEING

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FIG 'A' NUMBER: 6701

SERIAL NUMBER: 0000160

CHECK LIST NO.

6.2.1 MISSILE WEIGHING CHECK LIST

DATE

MODEL WS-133

FINAL ASSEMBLY DRAWING NO. 21-50150

ITEM NUMBER	DESCRIPTION	PART NO.	MISSILE NO. 708			MISSILE	LAUNCH		
			RECORD OF CHECKING (DATE)						
			Mo	Day	Yr				
	BODY SECTION ASSY (Continued)								
	Bolt - Pan Head (16)	PACB30EM-P4-1							
	Bolt - 100° Head (4)	PACB30EM-4-16							
	Bolt - 100° Head	PACB30EM-4-19							
	Bolt - 100° Head	PACB30EM-4-20							
	Bolt - 100° Head (55)	PACB30EM-4-4							
	Bolt - 100° Head (4)	PACB30EM-4-6							
	Bolt - 100° Head	PACB30EM-HL-1							
	Bolt - 100° Head	PACB30EM-HL-9							
	Bolt - 100° Head	PACB30EM-HL-6							
	Washer (22)	AN 960-416L							
	Nut (6)	NAS 679-AW							
	Insulation ▷	RMS 5-62							
		RMS 5-62							

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BOEING

NO. D2-13944-708

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► Installed at Air Force Plant 77

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6.2.2 WEIGHT AND BALANCE CHANGE RECORD

ASSOCIATE CONTRACTOR BOEING	CONTRACT NO.	AF 04(694)-046	REPORT NO.	OPR-2041
INTERSTAGE 1-2	LOT NO.		DATE	4-18-63
WS-133	DRAWING NO.	25-27201-11	PREPARED	J. HILL
MODEL NO.	U.O. MISSILE	713	APPROVED	G. ROBERTS
SERIAL NO.				

EQUIPMENT CHANGE RECORD

ENT	PART NO.	DESCRIPTION OF EQUIPMENT	WEIGHT AND BALANCE					
			WEIGHT	X AXIS ARM	X AXIS MOMENT	Y AXIS ARM	Y AXIS MOMENT	Z AXIS ARM
1								
2	25-27201-11	Body Section (As Weighed)	356.05	77.62	27.635.6	100.13	35.652.0	100.38
3								
4								
5	ADD:		0					
6								
7								
8	DEDUCT:		0					
9								
10								
11	25-27201-11	Body Section (Complete)	356.05	77.62	27.635.6	100.13	35.652.0	100.38
12								
13								
14								
15								
16								
17								
18								
19								
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6.2.3.

WEIGHT AND BALANCE CHANGE RECORD

ASSOCIATE CONTRACTOR	BOEING	CONTRACT NO.	AF 04(694)-046	REPORT NO.	OPR-2042
COMPONENT	INTERSTAGE 1-2	LOT NO.		DATE	4-17-63
MODEL NO.	WS-133	DRAWING NO.	25-27201-11	PREPARED	J. HILL
SERIAL NO.	00000162	U.O. MISSILE	715	APPROVED	G. ROBERTS

EQUIPMENT CHANGE RECORD

ITEM	DESCRIPTION OF EQUIPMENT	WEIGHT AND BALANCE					
		WEIGHT	X AXIS ARM	X AXIS MOMENT	Y AXIS ARM	Y AXIS MOMENT	Z AXIS ARM
1							
2	25-27201-11 Body Section (As Weighed)	361.40	78.05	28,207.1	99.94	36,119.5	100.18
3							
4							
5	ADD:	0					
6							
7							
8	DEDUCT:	0					
9							
10							
11	25-27201-11 Body Section (Complete)	361.40	78.05	28,207.1	99.94	36,119.5	100.18
12							
13							
14							
15							
16							
17							
18							
19							
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BOEING

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6.2.4 WEIGHT AND BALANCE CHANGE RECORD

ASSOCIATE CONTRACTOR	BOEING	CONTRACT NO.	AFO4(694)-046	REPORT NO.	OPR-2043
COMPONENT	<u>INTERSTAGE 1-2</u>	LOT NO.		DATE	4/12/63
MODEL NO.	<u>WS-133</u>	DRAWING NO.	<u>25-27201-11</u>	PREPARED	<u>T. VOGEL</u>
SERIAL NO.	<u>00000163</u>	U.O. MISSILE	<u>T1</u>	APPROVED	<u>G. ROBERTS</u>

EQUIPMENT CHANGE RECORD		WEIGHT AND BALANCE					
ENT	PART NO.	DESCRIPTION OF EQUIPMENT	WEIGHT	X AXIS	Y AXIS	Z AXIS	NONCENT
			ARM	ARM	ARM	ARM	
1	25-27201-11	Body Section (As Weighed)	355.45	77.92	27.696.1	99.90	35.508.0
2							100.22
3							35.621.9
4							
5	ADD:		0				
6							
7							
8	DEDUCT:		0				
9							
10	25-27201-11	Body Section (Complete)	355.45	77.92	27.696.1	99.90	35.508.0
11							100.22
12							35.621.9
13							
14							
15							
16							
17							
18							
19							
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BOEING

NO. D2-13944-708

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6.2.5 WEIGHT AND BALANCE CHANGE RECORD

ASSOCIATE CONTRACTOR BOEING
 COMPONENT INTERSTAGE 1-2
 MODEL NO. WS-133
 SERIAL NO. 0000181

CONTRACT NO. AF04(694)-046
 LOT NO.
 DRAWING NO. 25-27201-11
 U.O. MISSILE T10

REPORT NO. OPR-2040
 DATE 4/12/63
 PREPARED JIM HILL
 APPROVED G. ROBERTS

EQUIPMENT CHANGE RECORD

LINE	DESCRIPTION OF EQUIPMENT	WEIGHT AND BALANCE					
		WEIGHT	X AXIS ARM	X AXIS MOMENT	Y AXIS ARM	Y AXIS MOMENT	Z AXIS ARM
1							
2	25-27201-11 Body Section (As Weighed)	357.30	77.94	27,846.9	99.95	35,712.5	100.34
3							
4							
5	ADD:	0					
6							
7							
8	DEDUCT:	0					
9							
10							
11	25-27201-11 Body Section (Complete)	357.30	77.94	27,846.9	99.95	35,712.5	100.34
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
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BOEING

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6.2.6 WEIGHT AND BALANCE CHANGE RECORD

ASSOCIATE CONTRACTOR BOEING
 INTERSTAGE 1-2
 COMPONENT WS-133
 MODEL NO. 0000182
 SERIAL NO.

CONTRACT NO. AF04(694)-046
 LOT NO. 25-27201-11
 DRAWING NO. U.C. MISSILE
 816

REPORT NO. OPR-2047
 DATE 4/24/63
 PREPARED R. ST. ROMAIN
 APPROVED G. ROBERTS

EQUIPMENT CHANGE RECORD

ENT	PART NO.	DESCRIPTION OF EQUIPMENT	WEIGHT AND BALANCE					
			WEIGHT	X AXIS ARM	Y AXIS ARM	Z AXIS ARM	Y AXIS MOMENT	Z AXIS MOMENT
1	25-27201-11	Body Section (As Weighed)	357.75	71.99	21,902.0	99.87	35,728.9	100.25
2								35,864.0
3								
4								
5	ADD:		0					
6								
7								
8	DEDUCT:		0					
9								
10								
11	25-27201-11	Body Section (Complete)	357.75	71.99	21,922.0	99.87	35,728.9	100.25
12								35,864.0
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
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BOEING NO. D2-13944-708
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6.2.7 WEIGHT AND BALANCE CHANGE RECORD

ASSOCIATE CONTRACTOR	BOEING	CONTRACT NO.	AFO4(694)-046
COMPONENT	INTERSTAGE 1-2	LOT NO.	
MODEL NO.	WS-133	DRAWING NO.	25-27201-11
SERIAL NO.	0000183	V.O. MISSILE	731

REPORT NO. OPR-2044
 DATE 5-6-63
 PREPARED R. HOLCOMB
 APPROVED G. ROBERTS

EQUIPMENT CHANGE RECORD

ENT	PART NO.	DESCRIPTION OF EQUIPMENT	WEIGHT AND BALANCE					
			WEIGHT		X AXIS		Y AXIS	
			ARM	moment	ARM	moment	ARM	moment
1								
2	25-27201-11	Body Section (As Weighed)	357.15	77.92	27,830.5	100.00	35,714.0	100.52
3								
4								
5	ADD:		0					
6								
7								
8	DEDUCT:		0					
9								
10								
11	25-27201-11	Body Section (Complete)	357.15	77.92	27,830.5	100.00	35,714.0	100.52
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
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BOEING NO. D2-13944-708
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6.2.8 WEIGHT AND BALANCE CHANGE RECORD

ASSOCIATE CONTRACTOR	BOEING	CONTRACT NO.	AF04(694)-046	REPORT NO.	OPR-2045
COMPONENT	INTERSTAGE 1-2	LOT NO.		DATE	4/23/63
MODEL NO.	WS-133	DRAWING NO.	25-27201-11	PREPARED	JIM HILL
SERIAL NO.	OCC0184	U.O. MISSILE	745	APPROVED	G. ROBERTS

EQUIPMENT CHANGE RECORD		WEIGHT AND BALANCE								
ENCL	PART NO.	DESCRIPTION OF EQUIPMENT	WEIGHT		X AXIS		Y AXIS		Z AXIS	
			ARM	moment	ARM	MOMENT	ARM	MOMENT	ARM	MOMENT
1										
2	25-27201-11	Body Section (As Welded)	357.00	78.09	27,877.2	99.88	35,655.5	100.43	35,853.5	
3										
4										
5	ADD:		0							
6										
7										
8	DEDUCT:		0							
9										
10										
11	25-27201-11	Body Section (Complete)	357.00	78.09	27,877.2	99.88	35,655.5	100.43	35,853.5	
12										
13										
14										
15										
16										
17										
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BOEING

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62.9 WEIGHT AND BALANCE CHANGE RECORD

ASSOCIATE CONTRACTOR	BOEING	CONTRACT NO.	AFO4(694)-046	REPORT NO.	OFR-2018
COMPONENT	INTERSTAGE 1-2	LOT NO.		DATE	4/29/63
MODEL NO.	WS-133	DRAWING NO.	25-27201-11	PREPARED	R. ST. ROMAIN
SERIAL NO.	0000185	U.O. MISSILE	858	APPROVED	G. ROBERTS

EQUIPMENT CHANGE RECORD		WEIGHT AND BALANCE								
LINE	PART NO.	DESCRIPTION OF EQUIPMENT	WEIGHT		X AXIS		Y AXIS		Z AXIS	
			ARM	MOIMENT	ARM	MOIMENT	ARM	MOIMENT	ARM	MOIMENT
1										
2	25-27201-11	Body Section (As Weighed)	359.35	77.96	28,013.5	100.01	35,937.0	100.38	36,072.0	
3										
4										
5	ADD:		0							
6										
7										
8	DEDUCT:		0							
9										
10										
11	25-27201-11	Body Section (Complete)	359.35	77.96	28,013.5	100.01	35,937.0	100.38	36,072.0	
12										
13										
14										
15										
16										
17										
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6.2.10 WEIGHT AND BALANCE CHANGE RECORD

ASSOCIATE CONTRACTOR	BOEING	CONTRACT NO.	AFO4(694)-046	REPORT NO.	OPR-2046
COMPONENT	INTERSTAGE 1-2	LOT NO.		DATE	4/19/63
MODEL NO.	MS-133	DRAWING NO.	25-27201-11	PREPARED	R. ST. ROMAIN
SERIAL NO.	0000186	U.O. MISSILE	T16	APPROVED	G. ROBERTS

EQUIPMENT CHANGE RECORD

ITEM	PART NO.	DESCRIPTION OF EQUIPMENT	WEIGHT AND BALANCE					
			WEIGHT	X AXIS ARM	X AXIS MOMENT	Y AXIS ARM	Y AXIS MOMENT	Z AXIS ARM
1								
2	25-27201-11	Body Section (As Weighed)	358.65	78.00	27,976.2	99.86	35,815.9	100.29
3								
4								
5	ADD:		0					
6								
7								
8	DEDUCT:		0					
9								
10								
11	25-27201-11	Body Section (Complete)	358.65	78.00	27,976.2	99.86	35,815.9	100.29
12								
13								
14								
15								
16								
17								
18								
19								
20								
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BOEING

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6.3.1 WEIGHT AND BALANCE CHANGE RECORD

ASSOCIATE CONTRACTOR	BOEING	CONTRACT NO.	AF04(694)-046	REPORT NO.	OPR-2039
COMPONENT	SKIRT	LOT NO.		DATE	4/9/63
MODEL NO.	WS-133	DRAWING NO.	25-27207-3	PREPARED	M. BAIRD
SERIAL NO.	0000160	U.O. MISSILE	708	APPROVED	G. ROBERTS

ENT	DESCRIPTION OF EQUIPMENT	WEIGHT AND BALANCE					
		WEIGHT	X AXIS ARM	Y AXIS ARM	Z AXIS ARM	WEIGHT	ARM
1	25-27207-3 Body Section (As Welded)	338.25	69.21	23,409.6	100.47	33,984.4	100.77
4	ADD:	0					
5	DEDUCT:	0					
6							
7							
8							
9							
10							
11	25-27207-3 Body Section (Complete)	338.25	69.21	23,409.6	100.47	33,984.4	100.77
12							
13							
14							
15							
16							
17							
18							
19							
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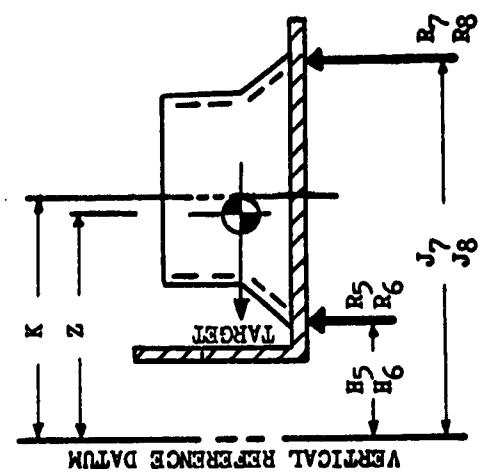
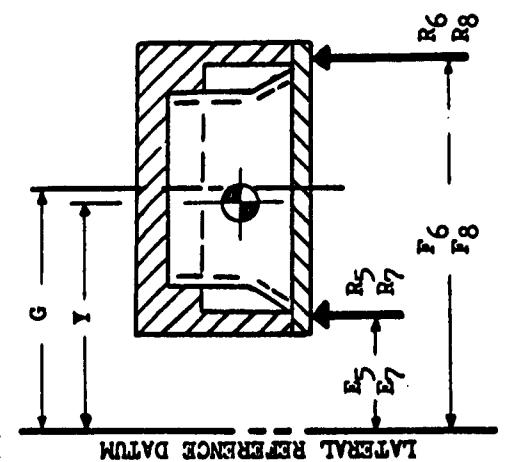
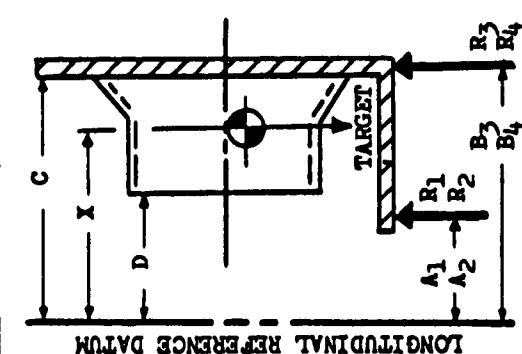
SERIAL NO. 0000160

6.3.1

ACTUAL WEIGHT RECORD - SKIRT

V/O MISSILE 708
MISSILE MODEL MS-133
CONFIGURATION TAH

DRAWING NO. 25-27207-
DCN E
ADCN 26



CHECK LIST NO. 9
REPORT NO. OPR-2039
REPORTED BY RS/WB
PAGE NO.
CHECKED BY GVR
DATE 4/9/63

WEIGHING DATA

REACTION	GR. WT.	TARE	CORR.	NET WT.	REACTION	GR. WT.	TARE	CORR.	NET WT.
R1	194.40	81.95	112.45	49.10	R5	184.70	135.60		60.99
R2	79.00	22.65	56.35	28.40	R6	284.70	168.00		116.70
R3	225.45	166.40	59.05	233.15	R7	233.15	115.15		118.00
R4	338.85	228.45	110.40	124.50	R8	124.50	80.05		54.45
TOTAL	837.70	499.45	338.25	837.05	TOTAL	498.80			338.25

DIMENSIONAL DATA

REACTION	NET WT.	ARM	MOMENT	REACTION	NET WT.	ARM	MOMENT	REACTION	NET WT.	ARM	MOMENT
R1	112.45	51.175		R5	49.10	60.99		R5	49.10	61.00	
R2	56.35	51.172		R6	116.70	139.00		R6	116.70	139.00	
R3	59.05	87.173		R7	118.00	61.00		R7	118.00	139.00	
R4	110.40	87.173		R8	54.45	139.00		R8	54.45	139.00	
AS WGD	338.25	69.21	23,409.6	AS WGD	338.25	100.47	33,984.4	AS WGD	338.25	100.77	34,085.4

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BOEING

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FIG. 'A' NUMBER: 6901SERIAL NUMBER: 0000160

6.3.1 MISSILE WEIGHING CHECK LIST

MODEL WS-133FINAL ASSEMBLY DRAWING NO. 21-50150

ITEM NUMBER	DESCRIPTION	PART NO.	MISSILE NO. <u>708</u> Noted			RECORD OF CHECKING (DATE)		
			BASIC WEIGHT	AS WEIGHTED	WEIGHT	MISSILE		
						REMOTE SITE	SHIPMENT	AS REMOVED
	BODY SECTION ASSY	25-21207-3					-	-
	Skirt Assy	25-21206-1					-	-
	Cowl Access Door	26-12687-1					X	X
	Marking Instl	25-30134-13					X	X
	Plate	29-23655-1					X	X
	Plate	29-23655-2					X	X
	Screw	(4) NAS 603-10					X	X
	Screw	NAS 517-3-3					X	X
	Supt Instl G&C	25-27766-15					X	X
	Insulation	HMS 5-62					X	X

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6.3.2 WEIGHT AND BALANCE CHANGE RECORD

ASSOCIATE CONTRACTOR	BOEING	CONTRACT NO.	AF 04(694)-046	REPORT NO.	OPR-2014
COMPONENT	SKIRT	LOT NO.		DATE	4-12-63
MODEL NO.	WS-153	DRAWING NO.	25-27207-3	PREPARED	T. WOGEL
SERIAL NO.	0000161	U.O. MISSILE	713	APPROVED	G. ROBERTS

EQUIPMENT CHANGE RECORD

LINE	PART NO.	DESCRIPTION OF EQUIPMENT	WEIGHT AND BALANCE					
			WEIGHT	X AXIS ARM	X AXIS MOMENT	Y AXIS ARM	Y AXIS MOMENT	Z AXIS ARM
1								
2	25-27207-11	Body Section (As Weighed)	336.85	69.28	23,336.1	100.42	33,827.6	100.52
3								
4								
5	ADD:		0					
6								
7								
8	DEDUCT:		0					
9								
10								
11	25-27207-11	Body Section (Complete)	336.85	69.28	23,336.1	100.42	33,827.6	100.52
12								
13								
14								
15								
16								
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6.3.3 WEIGHT AND BALANCE CHANGE RECORD

ASSOCIATE CONTRACTOR	BOEING	CONTRACT NO.	AF04(694)-046	REPORT NO.	OPR-2042
COMPONENT	SKIRT	LOT NO.		DATE	4/12/63
MODEL NO.	WS-1-33	DRAWING NO.	25-27207-3	PREPARED	W. RAIRD
SERIAL NO.	00000162	U.O. MISSILE	TLS	APPROVED	G. ROBERTS

EQUIPMENT CHANGE RECORD

LINE	PART NO.	DESCRIPTION OF EQUIPMENT	WEIGHT AND BALANCE		
			WEIGHT	X AXIS ARM	Y AXIS ARM
1					
2	25-27207-3	Body Section (As Weighted)	337.60	69.39	23,424.9
3					
4					
5	ADD:		0		
6					
7					
8	DEDUCT:		0		
9					
10					
11	25-27207-3	Body Section (Complete)	337.60	69.39	23,424.9
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
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6.3.4 WEIGHT AND BALANCE CHANGE RECORD

ASSOCIATE CONTRACTOR	BOEING	CONTRACT NO.	AF 04(694)-046	REPORT NO.	OPR-2043
COMPONENT	SKIRT	LOT NO.		DATE	4-16-63
MODEL NO.	WS-133	DRAWING NO.	25-25207-3	PREPARED	J. HILL
SERIAL NO.	0000163	U.O. MISSILE	717	APPROVED	G. ROBERTS

ITEM	DESCRIPTION OF EQUIPMENT	WEIGHT AND BALANCE										
		WEIGHT	X AXIS	Y AXIS	Z AXIS	ARM	ARM	MOMENT	ARM	MOMENT	ARM	Z AXIS
1												
2	25-25207-3 Body Section (As Weighed)	340.95	69.31	23.630.5	100.40	34.230.9	100.52	34.273.4				
3												
4												
5	ADD:	0										
6												
7												
8	DEDUCT:	0										
9												
10												
11	25-25207-3 Body Section (Complete)	340.95	69.31	23.630.5	100.40	34.230.9	100.52	34.273.4				
12												
13												
14												
15												
16												
17												
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6.3.5 WEIGHT AND BALANCE CHANGE RECORD

ASSOCIATE CONTRACTOR	BOEING	CONTRACT NO.	AF04(694)-046	REPORT NO.	OPR-2040
COMPONENT	SKIRT	LOT NO.		DATE	4/10/63
MODEL NO.	WS-133	DRAWING NO.	25-27207-3	PREPARED	H. CHRISTIANSEN
SERIAL NO.	0000181	U.O. MISSILE	710	APPROVED	G. ROBBERS

EQUIPMENT CHANGE RECORD

ITEM	DESCRIPTION OF EQUIPMENT	WEIGHT AND BALANCE					
		WEIGHT	X AXIS ARM	Y AXIS ARM	Z AXIS ARM	MOMENT	MOMENT
1	25-27207-3 Body Section (As Weighed)	337.50	69.32	23,396.4	100.59	33,950.3	100.58
2							
3							
4							
5	ADD:	0					
6							
7							
8	DEDUCT:	0					
9							
10							
11	25-27207-3 Body Section (Complete)	337.50	69.32	23,396.4	100.59	33,950.3	100.58
12							
13							
14							
15							
16							
17							
18							
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6.3.6 WEIGHT AND BALANCE CHANGE RECORD

ASSOCIATE CONTRACTOR	BOEING	CONTRACT NO.	AF 04(694)-046	REPORT NO.	OPR-2047
COMPONENT	SKIRT	LOT NO.		DATE	4-19-63
MODEL NO.	MS-111	DRAWING NO.	25-27207-3	PREPARED	T. VOGEL
SERIAL NO.	0000182	U.O. MISSILE	816	APPROVED	G. ROBERTS

EQUIPMENT CHANGE RECORD

SEQ	PART NO.	DESCRIPTION OF EQUIPMENT	WEIGHT AND BALANCE					
			WEIGHT	X AXIS ARM	X AXIS MOMENT	Y AXIS ARM	Y AXIS MOMENT	ARM
1								
2	25-27207-3	Body Section (As Weighed)	338.05	69.21	23,392.6	100.54	33,987.8	100.49
3								
4								
5	ADD:		0					
6								
7								
8	DEDUCT:		0					
9								
10								
11	25-27207-3	Body Section (Complete)	338.05	69.21	23,392.6	100.54	33,987.8	100.49
12								
13								
14								
15								
16								
17								
18								
19								
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WEIGHT AND BALANCE CHANGE RECORD						
EQUIPMENT CHANGE RECORD		WEIGHT AND BALANCE				
ITEM	DESCRIPTION OF EQUIPMENT	WEIGHT	X AXIS ARM	Y AXIS ARM	Z AXIS ARM	MOMENT
1						
2	25-27207-3 Body Section (As Weighed)	338.40	69.44	23,500.0	100.48	34,001.2
3						
4	ADD:	0				
5						
6						
7						
8	Deduct:	0				
9						
10						
11	25-27207-3 Body Section (Complete)	338.40	69.44	23,500.0	100.48	34,001.2
12						
13						
14						
15						
16						
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18						
19						
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6.3.8 WEIGHT AND BALANCE CHANGE RECORD

ASSOCIATE CONTRACTOR	BOEING	CONTRACT NO.	AF 04(694)-046	REPORT NO.	OPR-2045
COMPONENT	SKIRT	LOT NO.		DATE	4-17-63
MODEL NO.	VS-133	DRAWING NO.	25-27207-3	PREPARED	R. HOLCOMB
SERIAL NO.	0000184	U.O. MISSILE	745	APPROVED	G. ROBERTS

EQUIPMENT CHANGE RECORD

LINE	DESCRIPTION OF EQUIPMENT	WEIGHT AND BALANCE					
		WEIGHT	X AXIS ARM	X AXIS MOMENT	Y AXIS ARM	Y AXIS MOMENT	Z AXIS ARM
1							
2	25-27207-3 Body Section (As Weighed)	341.45	69.04	23,573.4	100.18	34,206.7	100.57
3							
4							
5	ADD:	0					
6							
7							
8	DEDUCT:	0					
9							
10							
11	25-27207-3 Body Section (Complete)	341.45	69.04	23,573.4	100.18	34,206.7	100.57
12							
13							
14							
15							
16							
17							
18							
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6.3.9 WEIGHT AND BALANCE CHANGE RECORD

ASSOCIATE CONTRACTOR BOEING
 SECRET
 COMPONENT WS-133
 MODEL NO. 0000185
 SERIAL NO.

CONTRACT NO. AF04(694)-046
 LOT NO. 25-27207-3
 DRAWING NO. U.O. MISSILE 858
 APPROVED R. HOLDOM
G. ROBERTS

REPORT NO. OPR-2048DATE 4/26/63

PREPARED

R. HOLDOM

APPROVED

G. ROBERTS

EQUIPMENT CHANGE RECORD

LINE	PART NO.	DESCRIPTION OF EQUIPMENT	WEIGHT AND BALANCE					
			WEIGHT	X AXIS ARM	X AXIS MOMENT	Y AXIS ARM	Y AXIS MOMENT	Z AXIS ARM
1								
2	25-27207-3	Body Section (As Weighed)	336.90	69.27	23,336.8	100.51	33,826.8	100.64
3								
4								
5	ADD:		0					
6								
7								
8	DEDUCT:		0					
9								
10								
11	25-27207-3	Body Section (Complete)	336.90	69.27	23,336.8	100.51	33,826.8	100.64
12								
13								
14								
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6.3.10 WEIGHT AND BALANCE CHANGE RECORD

ASSOCIATE CONTRACTOR	BOEING	CONTRACT NO.	AF 04(694)-046	REPORT NO.	OPR-2046
COMPONENT	SKIRT	LOT NO.		DATE	4-18-63
MODEL NO.	WS-133	DRAWING NO.	25-27207-3	PREPARED	J. HILL
SERIAL NO.	0000186	U.O. MISSILE	776	APPROVED	G. ROBERTS

EQUIPMENT CHANGE RECORD		WEIGHT AND BALANCE					
LINE	PART NO.	DESCRIPTION OF EQUIPMENT	WEIGHT	X AXIS	Y AXIS	Z AXIS	
			ARM	ARM	ARM	ARM	ARM
1							
2	25-27207-3	Body Section (As Weighed)	3335.55	69.38	23,280.4	100.47	33,714.1
3							
4							
5	ADD:		0				
6							
7	DEDUCT:		0				
8							
9							
10							
11	25-27207-3	Body Section (Complete)	3335.55	69.38	23,280.4	100.47	33,714.1
12							
13							
14							
15							
16							
17							
18							
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6.4 BASE HEAT DEFLECTORS

Serial No.	25-25878-2	25-25877-2	25-25876-2
0000160	6.16 lb.	20.54 lb.	21.39 lb.
0000161	6.18	20.47	21.32
0000162	6.25	20.45	21.36
0000163	6.23	20.92	21.34
0000181	6.10	20.51	21.26
0000182	6.20	20.46	21.29
0000183	6.11	20.55	21.39
0000184	6.17	20.47	21.40
0000185	6.16	20.39	21.39
0000186	6.12	20.36	21.42